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USAID Water Reuse and Environmental Conservation Project

Draft Guidance for Preparing Environmental Impact Assessments

وزارة البيئة

April 2014

Implemented by MoEnv

with assistance from AECOM

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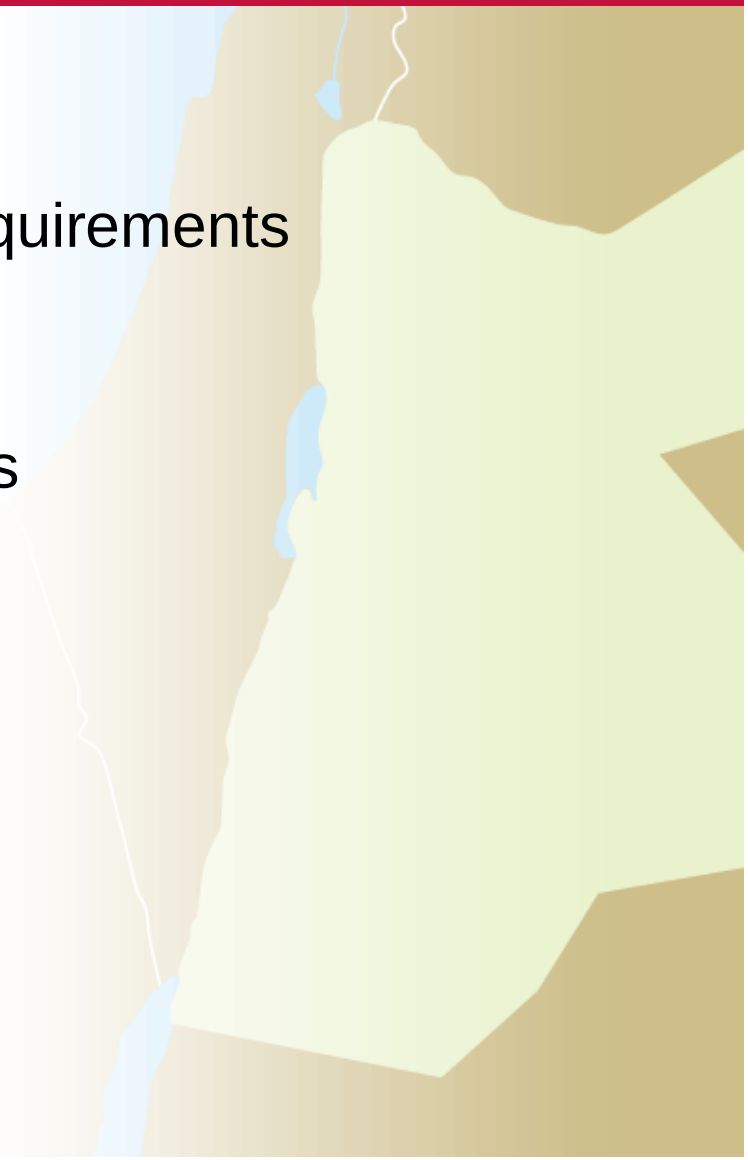
PRESENTATION OUTLINE

- Overview of EIA process and requirements
  - Approval process
  - Initial versus comprehensive
- Comprehensive EIA components
  - Front matter
  - Chapters 1-10
  - References and appendices



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JORDAN LAWS AND REGULATIONS

EIA required by

- Environment Impact Assessment Regulations of 2005 (No. 37)
  - Annexes 1-5
- Environmental Protection Law of 2006 (No. 52)

ANNEXES of EIA REGULATIONS of 2005

1: General information required

2: Projects requiring comprehensive EIA

3: Projects requiring initial EIA

4: Types of environmental impacts

5: EIA study components

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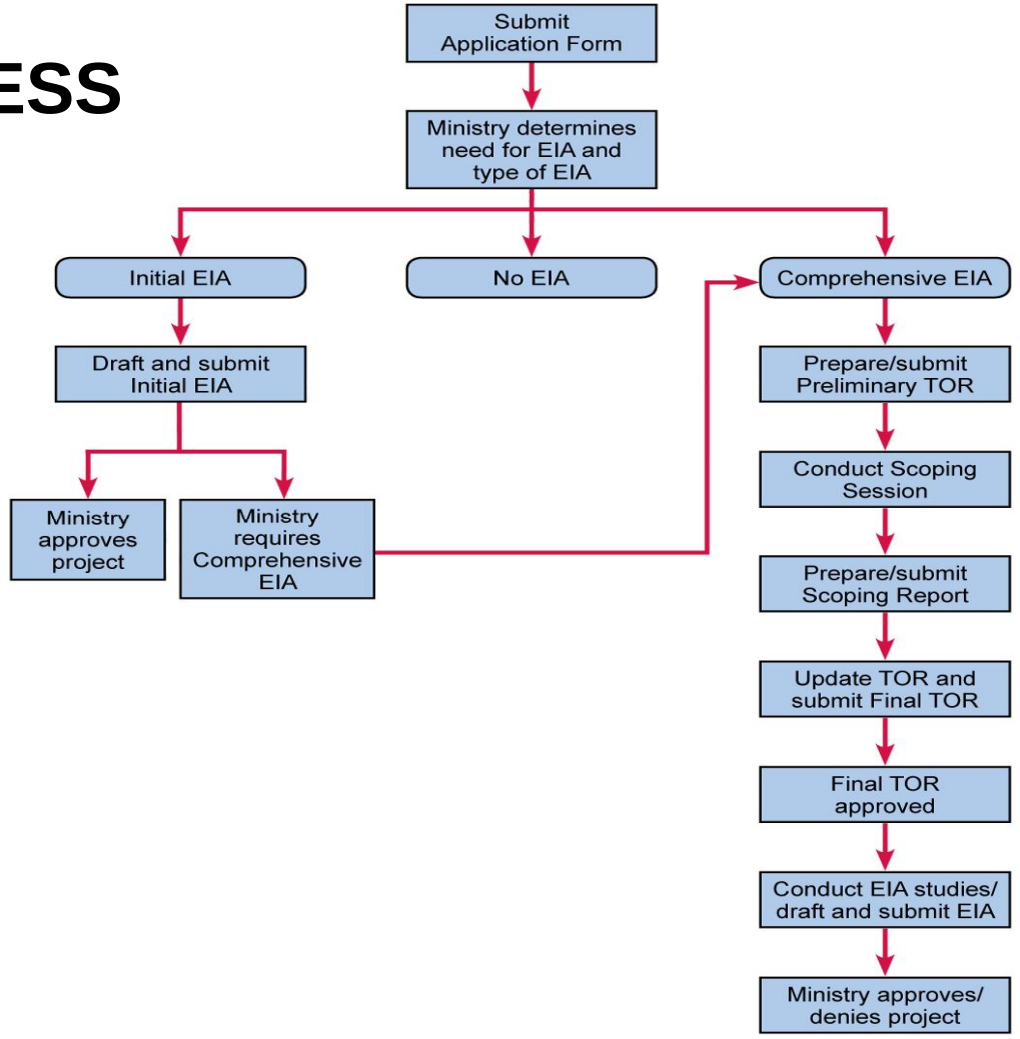
ENVIRONMENTAL APPROVAL PROCESS

- MoEnv determines Initial or Comprehensive EIA
- Initial (Preliminary
  - Annex 3
- Comprehensive
  - Annex 2



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INITIAL VS COMPREHENSIVE DOCUMENTS

- Initial (Preliminary)
  - Rationale and methods used to select potential impacts for study plan
  - Assessment of potential impacts
  - Mitigation measures to prevent significant impacts/need for Comprehensive EIA
  - Recommendation regarding need for Comprehensive EIA
- Comprehensive
  - Description of methods used to evaluate impacts
  - Assessment of impacts anticipated if project is built
  - Mitigation measures to reduce impacts
  - Environmental, Health, and Social Management

JS5

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INITIAL VS COMPREHENSIVE LEVEL OF DETAIL

EIA Section	Initial	Comprehensive
Baseline Conditions	Characterizations based on available data, mapping, site reconnaissance	Detailed field studies and sampling data
Impact Assessment	Best professional judgment based on data available, basic analysis and similar project examples	Detailed predictive modeling and evaluations (as relevant)
Risk Assessment	Not required	TOR should identify if Risk Assessment required

Slide 6

JS5 Deleted the bottom row, Environmental Management Plan, as it seems that both Initial and Comprehensive require it.
Jessica Strauss, 3/14/2014

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INITIAL EIA OUTLINE

Initial EIA Outline
Front Matter
Executive Summary
1. Project Description
2. Legal and Administrative Matters
3. Alternatives to the Project
4. Methods (Rationale for Selecting Potential Impacts for Study Plan)
5. Baseline Conditions (refer to Annex 4)
6. Assessment of Impacts
7. Mitigation Measures
8. Environmental, Health, and Social Management
9. Recommendation Regarding Comprehensive EIA
References
Appendices

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COMPREHENSIVE EIA OUTLINE

Component/ Chapter	Content
Front Matter	Title Page, Table of Contents, List of Acronyms
Executive Summary	Brief overview of project and findings
1. Project Description	Description of nature and location of project Clearly stated purpose and need
2. Legal and Administrative	Description of applicable laws and regulations
3. Alternatives to the Project	Description of alternatives, including no-action
4. Methods	Well-defined study area, evaluation criteria, analyses
5. Existing Environment	Description/ assessment of baseline conditions
6. Assessment of Impacts	Description/ assessment of potential impacts
7. Risk Assessment (if required)	Risk characterization, management and mitigation
8. Mitigation Measures	Measures to minimize and mitigate impacts
9. Environmental, Health, and Social Management	Monitoring measures, parameters to be monitored
10. Response to Comments	Response to comments on most recent EIA
References	List of references used to prepare EIA
Appendices	List of contributors, Staff CVs, Technical data

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PRESENTATION OUTLINE

- Overview of EIA process and requirements
  - Approval process
  - Initial versus comprehensive
- **Comprehensive EIA components**
  - Front matter
  - Chapters 1-10
  - References and appendices

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FRONT MATTER

- Title Page
- Table of Contents
  - EIA components, chapters and subsections
  - Figures
  - Tables
  - Appendices
- Acronyms and Abbreviations
- Glossary of Terms

GOVERNING BODIES	
JURISDICTION	
PROJECT NAME	
PROJECT LOCATION	
TYPE OF EIA	
PROJECT PROPONENT	
EIA PREPARER	
DATE OF FILING	
EIA SUBMITTED TO	

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EXECUTIVE SUMMARY

- Include two versions: Arabic and English
- Summarize EIA in clear non-technical language
  - Proposed action
  - Alternatives
  - Impacts
  - Mitigation
  - Risk assessment (if applicable)
  - Major conclusions of the assessment

ANNEX 5 of EIA REGULATIONS of 2005

Executive Summary should include:

"…analysis of the outcomes (conclusions) and recommendations."

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PROJECT DESCRIPTION, PURPOSE AND NEED

- Project description (Proposed Action)
  - Who, what, when, where
- Purpose and need
  - Why is project necessary
  - Clearly state project purpose
  - Define need for project
  - Identify related activities
  - Describe scoping process

ANNEX 1 of EIA REGULATIONS of 2005

Project description should include:

- *Nature of project*
- *Production processes*
- *Quality and quantity of expected wastes and emissions*
- *People and equipment for both construction and operation*

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LEGAL AND ADMINISTRATIVE FRAMEWORK*

- Identify applicable laws, regulations and performance standards
  - List jurisdictional authorities responsible for implementing
  - Explain how each law is related to project and how each should be integrated into the EIA
- Provide list of permits, licenses, financial assistance, and land transfer that must be obtained to implement project

ANNEX 5 of EIA REGULATIONS of 2005

Legal and Administrative Policy Framework should include:

"…the legal and administrative framework, which relied on it to prepare the policy"

** Indicates topic requiring further discussion*

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ENVIRONMENTAL LAWS, REGULATIONS, STANDARDS*

Environmental Impact Assessment Regulation No.37 of 2005
The Environmental Protection Law No. 52 of 2006
Water Authority Law No.18 of 1988
Groundwater Control Regulation No.85 of 2002
Protection of Environment due to Emergency Cases No.26 of 2005
Soil Protection Regulation No.25 of 2005
Regulations for the Protection of the Air Regulation No.28 of 2005
Marine Environment and Coastal Protection Regulation No.51 of 1999
Natural Reserves and National Parks Regulation No.29 of 2005
Management, Transportation and Handling of Harmful and Hazardous Substances Regulation No.24 of 2005
Management of Solid Waste Regulation No.27 of 2005
Instructions for Hazardous Waste Management and Handling of 2003
Inspection Regime and Environmental Control – adjusted – No.52 of 2006
Inspection Regime and Environmental Control No.52 of 2006
The Environmental Protection Fund Regulation No.52 of 2006
Environmental Instructions
Consumed Oil Management and Handling Instructions of 2003
Noise Reduction and Prevention Regulations of 2003
Agriculture Law No. 44 of 2002

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ALTERNATIVES TO PROJECT

- Process of identifying alternatives
- Alternative design, evaluation, and selection criteria
- Alternatives considered but eliminated
  - Shows a range of alternatives was developed
- Feasible alternatives
  - Location alternatives and design alternatives
  - Viable technology
  - Cost
  - Authority to implement
- No-action alternative

ANNEX 5 of EIA REGULATIONS of 2005

Analysis of Alternatives should include:

- *Alternative designs*
- *Alternative locations*
- *Alternative technology and environmental effects*
- *Basis for determining alternatives*

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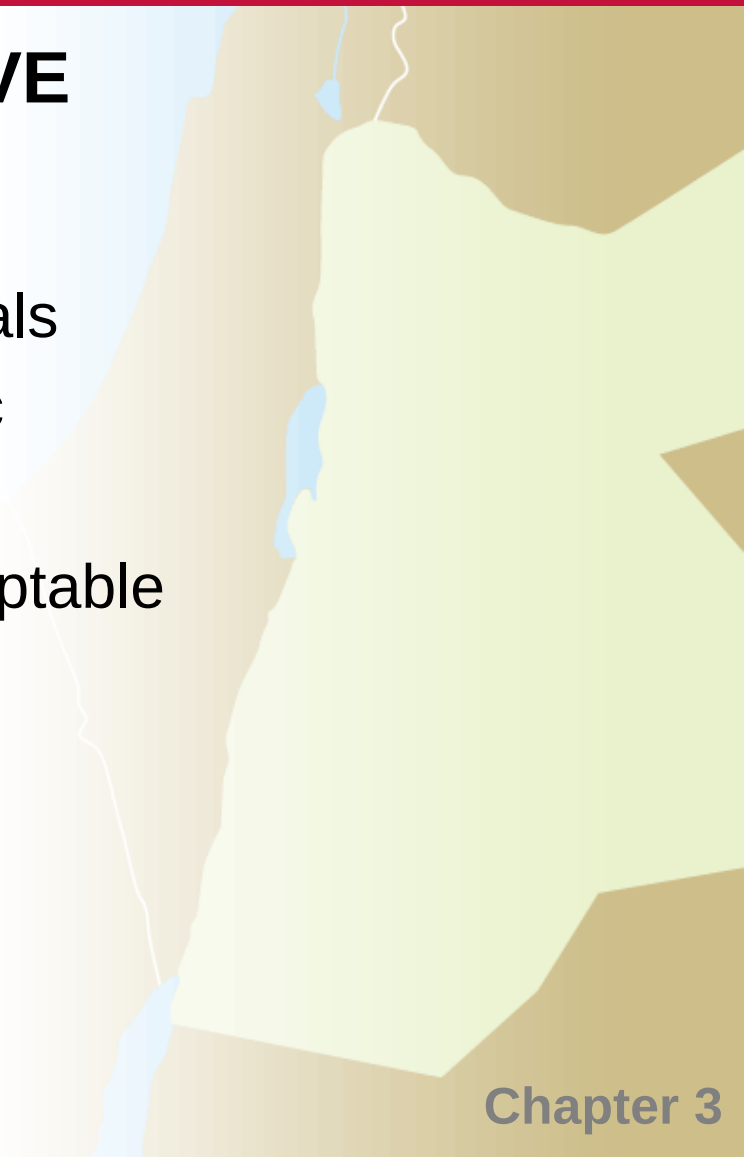
REASONABLE ALTERNATIVE

- Meets project purpose and need
- Scale consistent with project goals
- Physical configuration is realistic
- Cost appears reasonable
- Technologies are tested or acceptable



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METHODS – TECHNICAL TOPICS

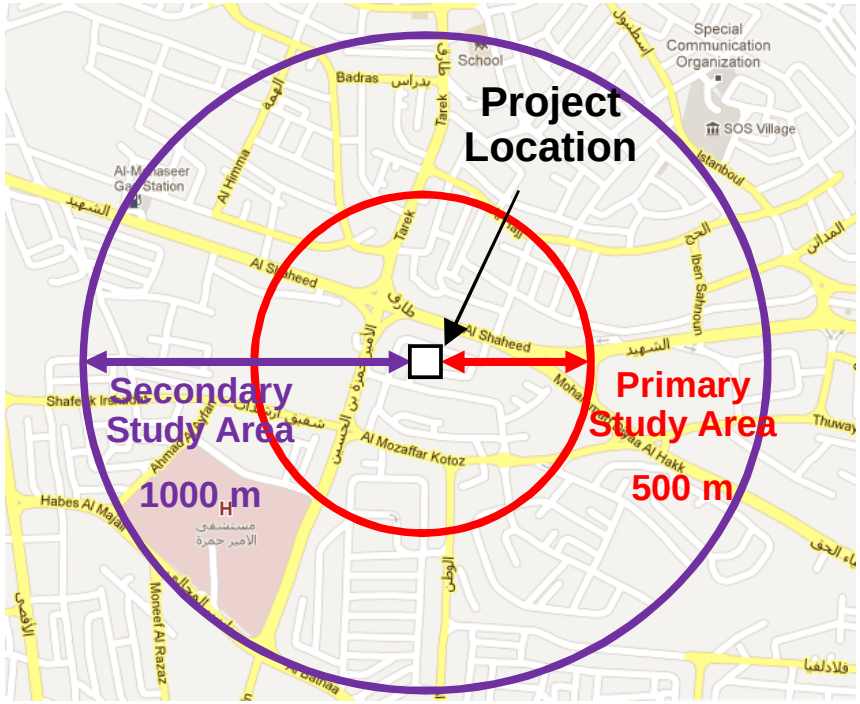
- Refer to TOR for technical areas of impact to be addressed
  - Air, historic resources, water quality
- Focus on topics with potential for greatest impact identified in TOR
- Give minor attention to topics not of concern
- Use logical reasoning

Topics of Concern
(partial list from Annex 4 of EIA Regulations of 2005):

- *Aesthetics*
- *Endangered species*
- *Water quality*
- *Aquatic life*
- *Ancient resources*
- *Traffic*
- *Population growth*
- *Drainage flooding*
- *Public health*
- *Infrastructure improvements*

STUDY AREAS

- Correspond to areas of potential effect (APE)
- Depend on technical parameters
- Encompass areas in which impacts may occur



Parameter	Primary Study Area	Secondary Study Area
Land Use	100 meters from project site boundaries	0.5 to 1 km from project site
Demographic Conditions	**Schools:** School district where project located **Libraries:** 1 km from project site **Child Care Centers:** 2 km from project site **Health Facilities:** Show on map only if project would directly impact	**Schools:** Primary/Secondary School: 1-1.5 km from project site **Libraries:** Extend to nearest branch if none within 1 km
Open Space	0.5/1 km radius for commercial/residential projects	
Cultural Resources	**Archaeological Resources:** Prehistoric: 1 km radius; Historic: within boundaries of nearest streets **Architectural Resources:** 100 meters radius from project site boundaries	
Biological Resources	Resources within immediate area of project; encompass resource in entirety if small enough for project to impact entire resource	
Transportation	Define by traffic routes to/from site (100 m to >1 km); include major roads, problem intersections, and alternative routes.	

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EVALUATION AND IMPACT CRITERIA

- Types of changes related to technical topics
- Must be clearly presented
- Necessary to establish for identification of baseline information

Example Criteria:

Traffic

– *Change in delay at key intersections*

–*Change in # accidents to pedestrians/vehicles*

Public Health

– *Change in emissions/quality of water or air that may affect population groups*

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IMPACT AND SIGNIFICANCE CRITERIA

- Very specific, detailed measures
  - Established for each impact criterion
  - Measure the changes resulting from alternatives
- Qualitative or quantitative
- May be defined by regulation
- Performance standards help to determine potential significance of an impact
  - See Partial List of Jordan Laws, Regulations, and Standards (Slide 12)

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IMPACT AND SIGNIFICANCE CRITERIA – LAND USE EXAMPLE

Topic (example)	Evaluation Criteria	Impact Criteria	Significance Criteria
Land Use	Change in land use on adjacent sites or land use in vicinity of proposed project	Displacement of current or planned use	*Current or planned use would be eliminated and use is of public benefit or use can not be relocated*
		Compatibility with surrounding area	*Extreme disruption to surrounding land uses*
		Interference with existing or future view and/or neighborhood character	*Substantial deterioration in view or major detriment to other activities in neighborhood*

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IMPACT AND SIGNIFICANCE CRITERIA – AIR QUALITY EXAMPLE

Topic (example)	Evaluation Criteria	Impact Criteria	Significance Criteria
Air Quality	Change in type or volume of emissions	Raising or lowering of air quality conditions to above or below air quality standards	*Refer to Technical Standards in Annex 1 of the Regulations for the Protection of the Air of 2005 of Jordan*
		Increase or decrease of dust to level above or below nuisance level	*Cannot be prevented through seeding, paving, covering, or wetting*
		Increase or decrease of odor emissions to level above or below nuisance level	*Refer to Technical Standards in Annex 1 of the Regulations for the Protection of the Air of 2005 of Jordan*

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TECHNICAL ANALYSES

- Description of quantitative or qualitative methodology for
  - Field surveys
  - Laboratory analyses
  - Calculations
  - Modeling, if applicable
- Relationship of analyses to evaluation criteria
- Clear and reasonable assumptions

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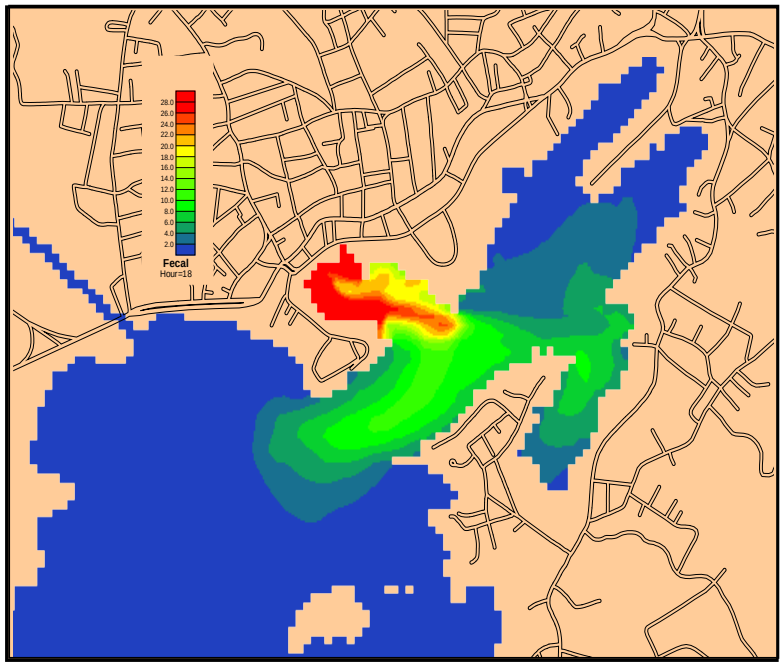
ASSESSMENT TOOLS – PREDICTIVE MODELS

Modeling description should include:

- Type of model
- Source of model
- Model selection process
- Previous applications of model for similar projects
- Model inputs and assumptions
- Relationship to evaluation criteria
- Interpretation of model results



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LIFE CYCLE ANALYSES* (IF REQUIRED IN TOR)

- Purpose
- Identify, calculate and evaluate inputs and outputs from human activities
- Methods
- Define the goal and scope
- Describe data collection
- Conduct life cycle impact assessment
  - Calculate emissions and resources and evaluate according to impacts
- Interpretation
  - Analyze & calculate significance of assessment results

Slide 26

JS14 Removed * since there was not a footnote on this slide.
Jessica Strauss, 3/14/2014

EXISTING ENVIRONMENT

- Existing (baseline) conditions
  - Physical
  - Biological
  - Socio-economic
- Future anticipated conditions (without the project)

ANNEX 5 of EIA REGULATIONS of 2005

Baseline data should include:

"…assessment of the studied location dimensions and describing the social, natural and economical conditions including any expected changes before the beginning of the project, taking into account the current suggested development activities inside the project location (related indirectly to the project)."

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EXISTING ENVIRONMENT TOPICS

5.1 Physical Environment

- Topography and geology
- Soils
- Water resources (surface water and groundwater)
- Weather parameters (climate)
- Air quality

5.2 Biological Environment

- Flora (plants)
- Fauna and avifauna (animals, including birds and bats)
- Threatened or endangered species and habitats
- Protected areas and areas of special protection

5.3 Socio-Economic Environment

- Land Use
- Cultural resources
- Noise
- Infrastructure
- Transportation
- Solid/hazardous waste management
- Demographic conditions
- Aesthetics

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ANALYSIS OF IMPACTS

- Identify potential impacts
  - What, how, where, when resources would be affected
- Quantify impacts
  - Short and long-term impacts
  - Direct, indirect and cumulative impacts
- Describe impact/significance criteria
- Compare “quantity” of impacts to criteria
- Determine if impacts exceed criteria
- Identify significant impacts requiring mitigation
- Include results of Life Cycle Analysis

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ANALYSIS OF IMPACT TOPICS

6.1 Physical Environment

- Topography and geology
- Soils
- Water resources (surface water and groundwater)
- Weather parameters (climate)
- Air quality

6.2 Biological Environment

- Flora (plants)
- Fauna and avifauna (animals, including birds and bats)
- Threatened or endangered species and habitats
- Protected areas and areas of special protection

6.3 Socio-Economic Environment

- Land Use
- Cultural resources
- Noise
- Infrastructure
- Transportation
- Solid/hazardous waste management
- Demographic conditions
- Aesthetics

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IMPACT DEFINITIONS

Direct Impacts

- Occur as direct result of proposed project at the same time and place
- Also known as primary or direct effects

Indirect Impacts

- Caused by the action and may be later in time or farther removed in distance, but are still reasonably foreseeable
- Wider-range consequences than direct impacts
- May be called secondary or indirect effects

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CUMULATIVE IMPACTS DEFINITION

- Result when the effects of an action are added to, or interact with, other effects in a particular place within a particular time
- Combination of these effects, and any resulting impacts, are focus of cumulative impact analysis

ANNEX 4 of EIA REGULATIONS of 2005

A project impacts the environment if there is:

"Overlapping with other projects

Overlapping with movements of fish and wild animals or their habitats

Overlapping with recreational, educational, scientific, religious uses"

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TYPICAL IMPACT ANALYSIS EXAMPLE

Parameter (Topic)	Type of Evaluation	Relation to Impact Criteria
Natural Resources	Calculate change in area and quality of habitat due to removal of trees	Measures change to area or quality of resource and provides basis to determine significance
Noise	Calculate change to ambient noise levels due to construction equipment; calculate change to noise due to increase in trucks on access roadways	Measures noise level changes at at specific locations to determine if exceedance has occurred
Air Quality	Calculate emissions from each equipment source at site; Calculate emissions from trucks and worker vehicles travelling to and from site	Measure the change in pollutant load at specific locations to determine if exceedance of air quality standards or major annoyance may occur

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SIGNIFICANT IMPACTS

- Determining significance
- Compare outcome of technical analyses to impact criteria
- Compare impacts to proposed significance criteria
- Impact and significance criteria should relate to quantitative or qualitative performance standards identified

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SUMMARIZING POTENTIAL IMPACTS – EXAMPLE

Technical Parameters	Direct/Indirect Impact			Cumulative Impact		
	Proposed Alternative	Alternative X	Alternative Y	Proposed Alternative	Alternative X	Alternative Y
Topography, geology, and soils	○	○	○	○	○	○
Surface and Groundwater	○	●	○	○	●	○
Air Quality	○	○	○	○	●	○
Noise	○	○	○	○	○	●
Technical Parameter X	○	○	○	○	○	○
Technical Parameter Y	○	○	○	○	○	○
Key: ○ No significant impact anticipated ● Significant impact anticipated						

RISK ASSESSMENT* (IF REQUIRED IN TOR)

- Introduction/objectives, description of study boundaries
- Identification of receptors
- Exposure (acute/chronic)
- Chemical/receptor/exposure pathway identification/screening
- Toxicity assessment
- Exposure assessment
- Risk characterization
- Uncertainty analysis
- Reporting
- Risk management and mitigation
- Other considerations (emergency response/spill control plans)

Slide 36

JS19 Removed * since there was not a footnote on this slide.
Jessica Strauss, 3/14/2014

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MITIGATION MEASURES

Purpose of mitigation

- To avoid, reduce, or eliminate potential negative impacts on affected resources

Mitigation measures should

- Target impact of concern
- Be feasible to implement
- Represent reasonable costs
- Include Best Available Technology
- Include short, long term, and cumulative impacts

ANNEX 5 of EIA REGULATIONS of 2005

"Determine suitable measurements with low cost to mitigate negative impacts to be within acceptable limits…determine institutional, training, and monitoring requirements for these measurements…"

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EXAMPLES DURING CONSTRUCTION

Topic	Potential Effect	Proposed Mitigation
Noise	Elevated noise levels at construction site boundary in excess of regulatory limits	• Confine construction work to normal working hours • Maintain proper noise suppression devices • Provide noise barriers or equipment enclosures • Provide acoustical protection for potential noise sources • Conduct routine inspection of equipment/vehicles
Traffic	Decline in LOS and roadway capacity on access roads to site	• Design and implement construction traffic controls • Post traffic detail as appropriate • Schedule material deliveries to avoid rush hours • Identify construction access locations
Air Pollution	Dust from construction activities	• Minimize exposed surfaces including stockpiles • Apply wetting agent to site • Cover all dump trucks and equipment carrying dirt

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MITIGATION*

- Temporary and permanent measures to be taken to avoid, reduce, and mitigate potential impacts
- Significant impacts remaining after mitigation (see example)
- Responsible parties
- Training/monitoring requirements
- Anticipated (feasible) schedule for implementation

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EXAMPLE MITIGATION SUMMARY

Technical Parameters	Direct/Indirect Impact			Cumulative Impact		
	Proposed Alternative	Alternative X	Alternative Y	Proposed Alternative	Alternative X	Alternative Y
Topography, geology, and soils	○	○	○	○	○	○
Surface and Groundwater	○	●	○	○	●	○
Air Quality	○	○	○	○	●	○
Noise	○	○	○	○	○	●
Technical Parameter X	○	○	○	○	○	○
Technical Parameter Y	○	○	○	○	○	○

Key: ○ No significant impact ● No significant impact after mitigation ● Significant impact

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ENVIRONMENTAL, HEALTH, AND SOCIAL MANAGEMENT

- Health, Safety and Environmental Management Policy
- Environmental Management Plan
- Emergency Plan
- Resettlement Compensation Action Plan (if required)
- Waste Management Plan
- Rehabilitation Plan

ENVIRONMENTAL MANAGEMENT PLAN

- Identify what (water quality, noise levels) is to be monitored
- Identify specific monitoring measures
- Identify responsible party for monitoring
- Confirm sufficient resources (funds, staff) to undertake monitoring
- Define monitoring period and frequency
- Spell out reporting requirements
- Indicate if specific training is needed
- Indicate what happens if monitoring shows impacts are not reduced

ANNEX 5 of EIA REGULATIONS of 2005

"Includes determining: monitoring type, cost, responsible persons and other inputs such as training."

Slide 42

JS23 Changed from "Environmental Management Plan" to better describe the section.
Jessica Strauss, 3/14/2014

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CONSTRUCTION EXAMPLE

Proposed mitigation measure	Parameters to be monitored	Additional inspection items	Measurement frequency	Institutional responsibilities	
				Enforcement	Reporting
Measures for minimizing dust; AQ emission control on equipment	Ambient air: CO2, CO, NO_x, SO_2, PM_{10}	Site inspections & review of site plans;	Daily site inspection; weekly air monitoring	Contractor Third party supervisor	Supreme Council for Antiquities
Provide noise mufflers on construction equipment and install noise barrier	Noise levels (dBA, Leq)	Review weekly logs of complaints of noise pollution	Weekly	Contractor Third party supervisor	

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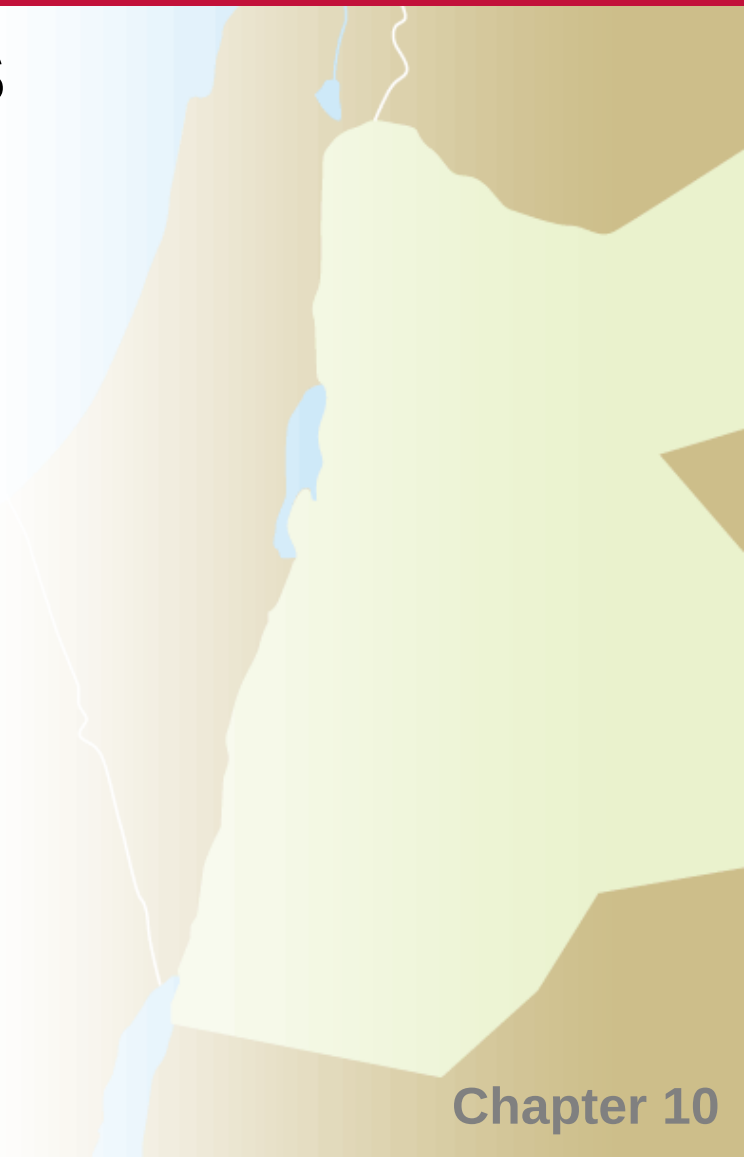
RESPONSE TO COMMENTS

- Include response to comments received on most recent EIA document
- Comments can be included in main text of EIA
- If voluminous, comments can be summarized in main text and provided in a separate appendix



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REFERENCES

- Alphabetized list of material incorporated by reference, including:
  - Documents/research papers
  - Correspondence documentation (letters, email or phone)

ANNEX 5 of EIA REGULATIONS of 2005

"List of references includes the written materials used in document preparing process."

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APPENDICES

- List of contributors who prepared EIA
- Correspondence documentation
  - Meeting records and agency consultation
- Detailed technical data (traffic analyses, hydrologic calculations, modeling data)
- Curriculum Vitae (CVs) of project staff

ANNEX 5 of EIA REGULATIONS of 2005

Appendices include:

"- List of contributors in preparing the EIA document (institutions, individuals)

- Record of consultancy meetings between the relevant parties to the project and documentation of all meetings held between the effected parties and the local NGOs"

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